

AMENDMENTS TO THE CLAIMS

Claim 1 (currently amended): An active pixel sensor device, comprising:

an array of pixels, arranged in logical units, wherein each pixel comprises a photosensor element, an in-pixel buffer element, and an in-pixel selector element; and

a plurality of analog-to-digital converters, formed on the same substrate as said pixel sensor array, and each associated with N logical units of the pixel sensor array, each of said N logical units having including a plurality of pixels, each of said plurality of analog-to-digital converters comprising:

a plurality of storage elements; and

an analog-to-digital (ADC) portion, said ADC portion for receiving an analog signal from one of said pixel sensors of an associated logical unit when a selector element associated with said one pixel is enabled, and for converting said analog signal to a converted digital value, said ADC portion storing said converted value into one of said plurality of storage elements;

wherein

~~each analog to digital converter includes an ADC portion which receives an analog signal from one of said pixel sensors of an associated logical unit when a selector element associated with said one pixel is enabled, and converts said analog signal to a converted digital value indicating the output signal, and said ADC portion stores said converted digital value into one of a plurality of associated storage elements; and N is at least two.~~

Claim 2 (original): A sensor as in claim 1, wherein said logical units are lines of the array including either columns of the array or rows of the array.

Claim 3 (original): A device as in claim 2, wherein said analog-to-digital converters are associated with at least two adjacent lines of the array.

Claim 4 (previously presented): A device as in claim 3, further comprising a readout controller, controlling readout of information from the photosensor elements, by controlling said analog-to-digital converters to each convert information from a first line of the array, to store said information from the first line of the array in one of said plurality of associated storage elements, then to read out a second line of the array, and store information from said second line of the array in another one of said plurality of associated storage elements, and then to read out the information from all of said plurality of associated storage elements in a desired order.

Claim 5 (currently amended): A method of operating a pixel sensor array, comprising:

obtaining a pixel sensor array of photosensitive elements, each having a photosensitive element in a pixel, a buffer in said pixel associated with said photosensitive element, and a selector transistor in said pixel which is enabled to allow a signal from said pixel to pass, and disabled to block the signal from passing;

connecting a plurality of said outputs of said selector transistors to one another, to form

a plurality of logical units, each logical unit formed by a plurality of said output transistors which are connected to one another;

receiving, in each of a plurality of A/D converter units[[],] each comprising a plurality of first storage unit, a plurality of second storage units, and an analog-to-digital conversion (ADC) portion, a respective plurality of signals from a respective plurality of first logical units, and A/D converting said respective plurality of signals into a respective plurality of converted digital values and storing said respective plurality of converted digital values information in a respective one of said plurality of first storage units;

receiving, in said plurality of A/D converter units, a respective of signals from a respective plurality of second logical units, adjacent to said first logical units, and A/D converting said respective plurality of signals into a respective plurality of converted digital values and storing said respective plurality of converted digital values in a respective one of said plurality of second storage units; and

reading out said information from said A/D conversion unit in a different order than an order in which the information was converted.

Claim 6 (original): A method as in claim 5, wherein said different order is in a serial order.

Claim 7 (previously presented): A method as in claim 5, wherein said units are linear units which are one of rows and columns, and said different order include a first different order which skips lines between conversions, and a second different order

which is a complete order.

Claim 8 (previously presented): The device of claim 1, wherein each pixel is a CMOS pixel.